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09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908

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EXAMINER	
STEVENS, THOMAS H	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/630,918	KRAAL ET AL.	
	Examiner	Art Unit	
	Thomas H. Stevens	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 were reviewed.

Response to Applicant's Arguments (Response to Section Action)

35 U.S.C 103

2. Applicants' are thanked for addressing this issue. However, examiner stands behind original rejection because applicant arguments are non-persuasive. Applicants' verbose rebuttal for the reasons to combine of said prior art in mute since all three are interrelated to using virtual reality coupled to automotive design and manufacturing. Additionally, applicants taken issue the term "scale ratio" and refutes examiner's position that Naylor teaches a scaling down an exiting geometry (pg. 428, section 1.4, lines 7-8) with posture analysis (section 5.3). To take issue whether the function is stated as "scaling down" or "scale ratio" is merely playing with words since the functionally and the final solution are the same (i.e., adjustment of the virtual human as applicable).

Rejection

Claim Rejections - 35 USC § 103

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-6, 8-20 are rejected under 35 U.S.C. 103 (a) as unpatentable by Nayar ("DENEB/ERGO—A Simulation-based Human Factors Tool" (1995)), in view of Purschke (" Virtual Reality-New Methods for Improving and Accelerating the Development Process in Vehicle Styling and Designing" (1998)).

Nayar teaches an interactive 3D software simulation-based tool for human factors and ergonomic analysis which focuses on various motions, posture (abstract), scaling down (pg. 428, section 1.4, lines 7-8) to accommodate any specific purpose; but doesn't teach using this feature for automotive interior design.

Purschke et al, teaches a series of steps of car development using virtual humans for interior design.

At the time the invention, it would have been obvious to one of ordinary skill in the art to use Purschke et al to modify Nayar since it would have been advantageous to

have a scalable virtual human to adjust specific car interior features towards a specific market demographic.

Claim 1. A system for subjective evaluation of a vehicle design within a virtual environment using virtual reality comprising (Purschke: title): a scaleable physical property representative of the vehicle design, wherein the physical property is adjusted according to a scale ratio (Nayar pg. 428, section 1.4, lines 7-8) for an evaluator of the vehicle design wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population (Nayar: pg 482, sections 1.4; and 3; specifically, section 3, right column, 2nd paragraph, last sentence); a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator (Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1); a motion capture system for sensing a motion (Purschke: pg. 11, lines 26) of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; and a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design (Purschke: pg.1, Introduction, 3rd paragraph with pg. 9, figure 12; Nayar: figures 1 and 3).

Claim 2. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) includes an instrumented glove worn by

the evaluator for sensing motion of the evaluator's hand (Nayar: pg. 428, section 1.5; and Purschke: pg. 11, line 25).

Claim 3.The system of claim 1(Purschke: title; Nayar pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the motion capture system includes magnetic spatial tracking sensors located on the evaluator for sensing motion of the evaluator's full body (Purschke: pg. 11, lines 26).

Claim 4. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the virtual reality display mechanism includes a head mounted display mechanism worm by the evaluator for seeing the virtual environment through an eye of the virtual human (Purschke: pg. 11, lines 26).

Claim 5. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the computer system includes at least one video terminal displaying a view of the virtual environment as seen through an eye of the virtual human.

Claim 6. The system of claim 1(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein the computer system includes

at least one video terminal displaying a third person view of the virtual human immersed within the virtual environment (Nayar: pg. 428, section 1.5 with figure 1 pg. 429).

Claim 8. A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment (Purschke: pg. 4, section 1.3), wherein the virtual environment is created within a computer system and includes the vehicle design; determining a scale ratio and range of a target population for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a the target population (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1); preparing an adjustable property using the vehicle design and the scale ratio (Nayar: pg. 428, section 1.4, lines 7-8); vowing the virtual human within the virtual environment to virtual represent a scaled evaluator (Nayar: pg.428, section 3) aligning the virtual human in the virtual environment with the evaluator (Nayar: pg.428, section 3)and the property, performing the evaluation of the vehicle desire by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle (Purschke: pg 9-10, section 3) .

Claim 9. Method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of preparing an evaluator includes the step of measuring an anthropometric dimension of the

evaluator (Purschke: pg. 9, section 3.1 and Nayar: pg. 427, left column, section 1.1, line 10).

Claim 10.A method as set forth in claim 8(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of preparing an evaluator includes the step of positioning a motion capture system on the evaluator for sensing a motion of the evaluator (Purschke: pg. 9, section 3.1) and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment.

Claim 11.A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of preparing an evaluator includes providing the evaluator (Purschke: pg. 9, section 3.1) with a virtual reality display (Nayar: figures 1 and 3) mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

Claim 12. A method as set forth in claim 8 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8 with section 3; and Purschke: pg. 9 figure 12, and section 3.1) preparing an adjustable property includes the step of determining a scale ratio range for a member of a target population (Nayar: pg 482, sections 1.4; and 3; specifically, right column, 2nd

paragraph, last sentence) represented in the evaluation and using the scale ratio range to determine adjustability of the property.

Claim13. A method as set forth in claim 8(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8 with section 3; and Purschke: pg. 9 figure 12, and section 3.1) including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation.

Claim 14. A method as set forth in claim 8(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8 with section 3; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system (Nayar: pg. 428, section 1.4, lines 7-8 with section 3); creating a virtual human digitally to represent the evaluator using the digital motion capture sensor locations for the virtual human, the evaluator's measurements and the scale ratio (Nayar: pg. 428, section 1.4, lines 7-8 with section 3); aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator's, and checking that the motion of the virtual human mirrors the motion of the evaluator (Nayar: pg. 428, section 1.4, lines 7-8 with section 3; with Purschke: pg. 11, lines 26).

Claim 15. A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an adjustable property to represent the vehicle design (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1); measuring the evaluator (Nayar: pg. 428, section 3, left column, 2nd paragraph, lines 7-9); positioning a full-body motion capture system on an evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to a computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design determining a scale ratio and range of a target population for the evaluator wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a the target population (Nayar: pg. 428, section 1.4, and 3); adjusting the property using the scale ratio for the evaluator (Nayar: pg. 428, section 1.4, lines 7-8); growing the virtual human in the virtual environment using the measurements of the evaluator and the scale ratio to virtual represent a scaled evaluator(Nayar: pg. 428, section 3); aligning the virtual human in the virtual environment to the evaluator and the property; performing the evaluation of the vehicle design by the evaluator; and using the evaluation of the vehicle design in the desire of the vehicle (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1).

Claim 16. A method as set forth in claim 15(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1), including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation (Nayar: pg. 428, section 3, right column, 1st paragraph).

Claim 17. A method as set forth in claim 16(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) including the step of determining whether to use a new evaluator and using a new evaluator if determined to use a new evaluator (Nayar: pg. 428, section 3, right column, 1st paragraph).

Claim 18. A method as set forth in claim 17 (Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) including the step of determining whether to revise the scale ratio if determined not to use a new evaluator and revising the scale ratio if determined to revise the scale ratio (Nayar: pg. 428, section 3, right column, 1st paragraph).

Claim 19. A method as set forth in claim 15(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1) wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system (Nayar: pg. 428, section 4, 3rd paragraph);

creating a virtual human digitally using the motion capture sensor locations for the virtual human and the scaled measurements of the evaluator; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator (Nayar: pg. 428, section 3 and 4 with Purschke: pg. 11, lines 25-26); and checking that the motion of the virtual human mirrors the motion of the evaluator (Purschke: pg. 11, lines 25-26).

Claim 20. A method as set forth in claim 15(Purschke: title; Nayar: pg. 428, section 1.4, lines 7-8; and Purschke: pg. 9 figure 12, and section 3.1), determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine adjustability of the property (Nayar: pg 482, sections 1.4; and 3; specifically, section 3, right column, 2nd paragraph, last sentence).

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is (571) 271-0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (571) 272-3716. The centralized fax number is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (571)272-1400

December 17, 2004

THS

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER